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# CURRENT LITERATURE

## BOOK REVIEWS

### Ecology of Isle Royale

Isle Royale, Lake Superior, is a strategic point for ecological and biogeographical investigation for several reasons. It is situated in the boundary zone between two great life areas, the northeastern conifer forest region, and the eastern deciduous forest region. The isolation of the island from the mainland throughout its postglacial history has produced ideal conditions for the study of certain phases of plant and animal migration. Isolation has also resulted in unusual freedom from disturbing factors such as fire. Finally, the occurrence of certain forms far out of their ordinary range suggests opportunity for valuable floristic and faunistic investigation. The Michigan Biological Survey made a fortunate choice of a field of study when it sent the University Museum party to Isle Royale in the summer of 1905. During 1904 a similar expedition, including three of the same members, worked on the island for a few days, after spending some weeks in the Porcupine Mountains of the Northern Peninsula.<sup>1</sup>

The 1905 expedition was under the leadership of Dr. C. C. ADAMS, now of the University of Illinois, and about half of the report<sup>2</sup> was written by him. The prime object was ecological investigation from a dynamic standpoint. In nearly every phase of the work the successional relations of the biota were emphasized. In connection with this study the forms were listed and collections made, and most of the resulting catalogues are doubtless as complete as the limited time permitted.

The first thing that strikes one in glancing over the volume is that the report is dominantly, almost exclusively, a zoological study, only 31 out of 422 pages being devoted to the vegetation. We are left absolutely without a clear idea of the vegetation of the island—its aspect and relations—in spite of the fact that the animal successions are entirely dependent upon those of the vegetation. It should be said, however, that everywhere in the discussion this necessary relation is fully recognized. The trouble is that without an adequate discussion of the vegetation as a foundation it is impossible for a

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<sup>1</sup> An ecological survey of northern Michigan. Prepared under the direction of C. C. ADAMS. Lansing. 1906.

<sup>2</sup> ADAMS, C. C., An ecological survey of Isle Royale, Lake Superior. A report from the University of Michigan Museum published by the State Biological Survey as a part of the Report of the Geological Survey for 1908. pp. xiv+468. *figs.* 63. Lansing, Mich. 1909.

stranger to the region to gain a true conception of the interrelations of the whole biotic complex.

The report consists of two parts, including respectively ecological papers and annotated lists. Under part I we find the following: (1) Isle Royale as a biotic environment, C. C. ADAMS; (2) The ecological relations of the invertebrate fauna of Isle Royale, H. A. GLEASON; (3) The ecological distribution of the birds of Isle Royale, OTTO MCCREARY; (4) Fall migration of birds at Washington Harbor, Isle Royale, MAX M. PEET; (5) The ecological succession of birds, C. C. ADAMS; (6) The Coleoptera of Isle Royale, and their relation to the North American centers of dispersal, C. C. ADAMS. Part II includes annotated lists as follows: Notes on the vegetation of Isle Royale, and annotated lists of plants, W. P. HOLT; and various zoological lists prepared by members of the expedition and specialists.

The papers that treat directly or incidentally of the vegetation are nos. 1 and 2 of part I and HOLT's annotated list. The last, the only part directly concerned with the vegetation, comprises ten pages of ecological notes, followed by an annotated list of lichens, mosses, ferns, and seed plants. The total number of species listed is 364. That this list is very incomplete is shown by the fact that a number of species are mentioned in other parts of the report as occurring commonly, which do not appear at all in the catalogue. The very brief discussion of the vegetation that precedes the list is totally inadequate.

In the introductory paper of the report, "Isle Royale as a biotic environment" by ADAMS, there is much of interest and value to plant ecologists. The writer discusses the geologic history of the island, the climate, and the development of the habitats. The probable effect of the lake storms and surface currents in determining the composition of the flora and fauna is also treated in an interesting way.

GLEASON in his treatment of the invertebrates makes many incidental but valuable observations upon the plant successions. The brief summary with its appended generalized diagram showing the courses of the successions is the most valuable contribution to the plant ecology of the island to be found in the report.

Every ecologist, whether working with plants or animals, should read ADAMS' papers on the birds and the Coleoptera.

The report as a whole is an exceedingly valuable contribution, and Dr. ADAMS deserves great credit for carrying the work through to completion under conditions of very great difficulty. Upon such detailed studies of strategic localities will be built our future completer knowledge of biogeography. It is to be hoped that many similar expeditions may be carried out in various parts of the continent before further settlement and exploitation seriously interfere with natural conditions. It is also to be hoped that in all such studies the vegetation be given its full share of attention.—WILLIAM S. COOPER.